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Glass Kiln

Information Manual

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PRECAUTIONS

READ AND UNDERSTAND ALL OPERATING MANUALS BEFORE OPERATING THE KILN.

Kilns are as safe as any other electrical appliance when used under normal and proper operating conditions. All precautions must be observed.

A qualified electrician or service person should be used for all electrical service or repairs. All electrical codes must be met.

Make sure that all electrical specifications are followed. Use correct voltage, wire size and fuse or breakers. Make sure all electrical connections are tight. Avoid aluminum wire.

Always use the proper electrical receptacle or direct wire scheme. Never alter the cordset or cordset plug. Check all connections periodically for wear.

Kiln must be properly grounded.

Never allow the power cord to touch the kiln. If the cord, plug or receptacle become damaged replace immediately.

Replace any worn, damaged or defective parts immediately with Evenheat replacements only.

Never, ever use an extension cord to operate a kiln.

Do not alter the kiln or cordset in any way. Alterations can be dangerous. Alterations will void any warranties along with nullifying any U/L, CU/L or other Listing Agency markings.

Unplug or disconnect the kiln from the electrical service before servicing or vacuuming. Do not attempt to touch or replace the heating elements while the kiln is plugged in or connected to the electrical service. Shock may result.

The best location for the kiln is a concrete floor. If not available some type of adequate fireproof insulating material should be used beneath the stand to prevent discoloration of the floor or possible fire hazard.

Place only on the metal stand provided by Evenheat Kiln, Inc.

Do not install the kiln closer than 18” from combustible wall surface or object.

Install in a covered, well ventilated area.

It is the user’s responsibility to provide ventilation capable of removing all gases, fumes and other airborne contaminants produced during firing, safely firing from work area and building structure.

Never install outside. Avoid moisture.

Never place the kiln in a small, enclosed area such as a closet, cabinet or very small room.

The surface of the kiln is hot and burns are possible. Keep all children and unsupervised personnel away. Always wear protective clothing, gloves and eyewear when operating and handling a hot kiln.

Protective clothing includes, but is not limited to, loose fitting cotton clothing, heat resistant gloves and eyewear capable of filtering infrared light.

Do not store flammable or combustible products near the kiln such as gasoline, paint, aerosol cans, paper, curtains, plastics, etc..

Never place anything under or above the kiln for storage. Absolutely nothing should be propped against the kiln.

Do not operate the kiln over the maximum temperature rating printed on the nameplate. In most cases, the temperature of the glass kiln should not exceed 1800°F.

Fire all ware according to the manufacturer's instructions. Improper firing may result in damage to the kiln or ware.

Never fire a kiln unattended.

Do not use the kiln to prepare food.

Do not insert any object into the kiln without first turning off all switches and disconnecting the power supply. Shock may result.

Use care when looking into a hot kiln. High heat escapes quickly and injury may result.

What you need to know before you begin

This manual is designed to provide you with kiln set up, operation and basic firing instructions. It is not, repeat, it is not a manual designed to instruct you how to fire glass. You would be well advised to seek formal instruction through books or classes. These items are available to you through your glass kiln dealer. We do recommend that you get a copy of Gil Reynolds book "The Fused Glass Handbook". Consider it required reading.

Kiln Construction

Firebrick

Premium insulating firebrick is used to make up the firing chamber, bottom and lid. The brick is light weight and fragile and must be handled carefully and not bumped with shelves or ware. The brick is porous (small air pockets and voids) and stores heat produced by the kilns heating elements.

The sidewall and lid are specially routed to retain the heating elements without the use of metal pins. This special routing prevents the elements from pulling, drooping or sagging. High temperatures cause expansion and contraction of the brick and may lead to hairline cracks. This normal and in no way will effect the quality or performance of the kiln.

Heating Elements

The heating elements are coils of wire that produce heat inside the kiln. They are made from the highest quality, high temperature wire available. Life expectancy of the elements will depend upon the number of firings and firing temperatures. Glass firing temperatures are considered to be relatively low which helps extend life. Care should be taken that no foreign matter comes in contact with the elements. This includes glass, shelf primer or ether fired ware. Regular vacuuming of the element grooves is recommended.

Jacket and Lid Band

Both the outer jacket and lid band are made of stainless steel. Stainless steel is chosen for its long life, corrosion resistance and strength. Some tarnishing may appear, particularly at higher temperatures. The integrity of the construction is not effected by this tarnishing and may be removed with stainless polish. It is recommended that the lid band be tightened after each of the first three firings and checked for tightness periodically afterwards.

Peepholes and Peephole Covers

Peepholes serve two purposes. The first is to allow moisture and gas to escape from the kiln during firing. The second is to allow the user to check the firing chamber during the firing process.
Evenheat uses a special metal peephole cover that is permanently attached to the kiln. These covers will become hot during firing. Use protective gloves when opening and closing the peephole covers. Care should also be taken when viewing the chamber through the peephole. High heat escapes quickly and cause injury if viewed to quickly or closely. Use protective eyewear.

Control Panel

The control panel contains all electrical and electronic components used to operate the kiln. This panel is separated from the kiln body by a heatshield. This shield lowers the temperatures seen at the components thereby extending the life of these components.

Control Styles

Automatic Controls

Automatic control allows you to precisely control all firing rates, temperatures and soak times. Simply program the firing data into the controller and start the firing. Temperatures soak times and other firing data are displayed via a digital display. These controls also have a host of other functions that makes firing more enjoyable.

Evenheat uses a variety of automatic temperature controls. Operation of these controls is beyond the scope of this manual. Your best opportunity to learn about your particular control is to read and understand the operations manual that was included with your kiln.

Infinite switch

Depending on your model, your kiln will contain up to three of these switches. Each lid element is controlled by a single switch while all side elements are generally controlled by a single switch.

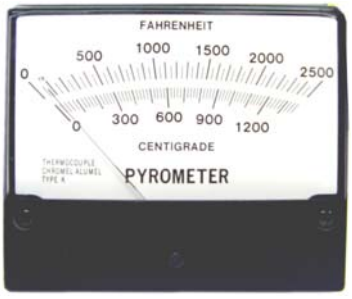
The infinite switch can best be described as a percentage switch. That is to say it supplies power for a period of time and removes power for a period of time. It repeats this cycle over and over. The “on” time verses the “off” time depends upon the setting of the switch.

On a low setting, the switch may be on 25% of the time and off the remaining 75% of the time. As the switch is rotated toward the higher settings the “on” time begins to get longer and the “off” time shorter. This effectively increases the heat seen in the firing chamber. It should be noted that the highest position (HIGH) supplies power to the elements 100% of the time. The infinite switches are adjusted throughout the firing process to control rate of temperature increase or decrease and to set soaking temperatures, if desired. When operating, the infinite switches will make a slight popping noise. This is normal.

Pyrometer

A pyrometer is a meter used to measure the temperature in side the kiln. A thermocouple (sensing probe) is attached to the meter and is inserted 1-1/2” to 2” (4 to 5cm) into the kiln chamber.

The pyrometer is useful as a guide when firing. It allows you to keep track of firing rates and temperatures. Although glass firing can be accomplished without the use of a pyrometer, it is recommended that one be used.



Kiln Set-up

Firing Location

Consideration of many factors must be given when choosing a location for the kiln. Refer to the beginning of this manual for a list of precautions that must be followed. Use common sense. Crowded, close quarters should be avoided. Ventilation is a must. Give yourself room to work.

Stand Assembly

If your kiln is 23" or larger in diameter, it is Dyna-Lift Ready. Please refer to Dyna-Lift Instructions to assemble your stand.

The kiln stand is shipped disassembled. Tools required for assembly includes a Phillips screwdriver and a 7/16" wrench.

Layout the frame angles in a square or rectangle on larger models with the bolt holes vertical. The corners of the frame angles are overlapped. Place the legs inside each corner and insert a bolt in each hole. Thread on nuts and tighten securely. Place plastic feet on the ends of each leg. Position the stand and check that it's level. Shim with metal if necessary.

Placement of the Kiln

Center the kiln on the stand so that it's stable and allows for the minimum of 18" to the closest wall or object. The kiln may have a metal bottom which is secured with screws. Position the kiln on the stand so that these bottom screws are not resting on the stand. Check that the kiln is level and shim with metal if necessary. Once positioned, check again that it's stable. Do so with the lid closed and again with the lid opened.

If your kiln is equipped with swing away peephole covers, loosen the screw ¼ turn to allow the cover to swing easily. The peephole covers are fastened securely for shipping.

The kiln should be vacuumed completely with a small dusting brush to remove any brick or brick dust generated during shipping. Be sure to vacuum the lid element groove. Dust in these grooves will cause imperfections in the finished piece. Be careful as brick is fragile.

Electrical Service

Connection

To operate safely and efficiently your kiln needs the proper electrical outlet with the correct amperage capacity and voltage. A licensed electrician or local power authority should determine if you have the proper service. All electrical changes should be performed by a licensed electrician.

Refer to the beginning of this manual for a list of precautions that must be followed. It is very important that all wire size and fusing/breaker selections are correct. Improper selection can lead to overheating of the cordset, receptacle, supply lines and fusing/breaker. Copper wire is preferred and we strongly suggest avoiding aluminum wire.

Through common sense and professional electrical service your kiln will provide many years of trouble free service.

Glass Kiln Electrical Specifications

Model	Width	Length	Depth	Max. Temp	Cubic Feet	Volts	Amps	Watts	Fuse Size	Min. Wire Size	USA NEMA Config.	Ship Weight
Hot Box	6.0”	6.0”	4.5”	1800° F	.110 ft^3	120V	12A	1440W	15A	12AWG	5-15R	25 lb.
Jr. Copper	10.0”	6.5”	9.0”	2200° F	.340 ft^3	120V	12A	1440W	15A	12AWG	5-15R	54 lb.
Studio 8/ Pro	8.0”	8.0”	4.5”	1800° F	.367 ft3	120V	12A	1440W	15A	12AWG	5-15R	30 lb.
Studio Pro 14	14.5”	14.5”	6.5”	1650° F	.80 ft^3	120V	15A	1800W	20A	12AWG	5-15R	130 lb.
Fishbone	14.25”	3.5”	7.5”	1200° F	.22 ft^3	120V	12A	1440W	15A	12AWG	5-15R	45 lb.
Hot Shot	14.5”	N/A	6.5”	1800° F	.700 ft^3	120V	12A	1440W	15A	12AWG	5-15R	70 lb.
GT4050	19.75”	15.75”	6.5”	1650° F	1.17 ft	240V	15A	3600W	20A	12AWG	6-20R	135 lb.
GTS 18-9	17.5”	N/A	9.0”	1800° F	1.30 ft^3	240V	27A	6460W	40A	8AWG	6-30R	100 lb.
GTS 23-9	23.5”	N/A	9.0”	1800° F	2.34 ft^3	240V	30A	7200W	40A	8AWG	6-50R	140 lb.
GTS 23-13	23.5”	N/A	13.5”	1800° F	3.51 ft^3	240V	30A	7200W	40A	8AWG	6-50R	195 lb.
GTS 2541-9	41.0”	25.5”	9.0”	1800° F	4.80 ft^3	240V	40A	9600W	50A	6AWG	6-50R	280 lb.
GTS 2541-13	41.0”	25.5”	13.5”	1800° F	7.20 ft^3	240V	40A	9600W	50A	6AWG	6-50R	310 lb.
Liberty Bell	74.0”	50.0”	13.0”	1650° F	27.83 ft^3	240V	75A	18000W	Consult Factory			1760 lb.

Specifications subject to change without notice or obligation. All models listed are both U/L and CU/L (Canadian) listed except for the Rapid Fire 6 which is U/L listed only. Standard production models are 120V and 240V, single phase. Other voltage and phase configurations are available including 100V, 200V, 208V, and 380/400/415V. Additionally, Evenheat offers a range of kilns for Europe that carry the CE mark. Kilns marked with an (*) are also available in 220V for foreign markets.

Preparing to Fire

Glass Preparation

For successful glass firing all glass being fused or otherwise combined must have the same expansion characteristics or COE. Attempting to kiln work glasses that do not share the same COE will result in breakage. This breakage occurs from stress that is created by COE differences.

It's important that your glass be clean. Fingerprints and oil from the cutter can fire into the surface of the glass and leave an unwanted film. You may use dish soap, commercial glass cleaner or isopropyl alcohol. Dry the glass with a soft towel. Handle with care.

Kiln Wash

Kiln wash, a.k.a. shelf primer, is a protective coating used to prevent glass from sticking to the firing surface. All items used for firing from shelves to molds must be coated with this kiln wash. Kiln wash is normally supplied in a dry form and must be mixed with water before application.

Mix the kiln wash to desired consistency. Water to powder ratios are usually given on the package. Use a soft brush to apply the wash to the surface of the shelf or mold. Keep in mind that your glass will take on the texture of the shelf or mold. A very smooth coating is generally the goal.

Many coatings will be needed to fully coat the shelf with reasonable drying times between coats. It is possible to hasten the drying process by loading the shelf or mold into the kiln and taking the temperature up to 400 to 500°F. Be sure that the shelf or mold is completely dry before using.

While it's possible that the kiln wash will remain on the shelf or mold after many firings it's always a good idea to inspect for wear and re-coat if necessary.

Pre-Fire

Your kiln is essentially ready for use as soon as it's connected electrically. It is wise, however, to perform a pre-fire before using the kiln for your work.

> The pre-fire will establish an oxide coating on the heating elements that protects them from any fumes and impurities released during the firing process.
>
> The pre-fire will drive off excess moisture and loosen any remaining brick and dust for removal.
> The pre-fire will allow you to become familiar with the control devises used on your kiln.

The pre-fire consists of taking the temperature of the kiln to about 1500°F. This should be accomplished over a three hour period.

For manually controlled kilns this involves increasing the heat by turning up all infinite switches to a higher number over time.
For automatically controlled kilns this involves programming in a rate of temperature increase at a rate of 500°F per hour up to the final temperature.

Positioning of the Shelf and Glass

Always use a shelf when firing, even when firing with a mold. If problems arise it is much easier and cheaper to replace a shelf than a kiln bottom.

Posts are used to bring the shelf up from the floor of the kiln. This allows the work to be moved closer to the lid elements while allowing heat to reach the underside of the shelf. A post length of 2” to 3” is typical. Use enough posts to support the shelf securely, 4 being the minimum.

Set the shelf on the posts positioning equally from all sides of the chamber. Set the mold on the shelf if one is being used. Position the glass on the shelf or mold as desired. You may find that using an adhesive to keep the glass in place helps. This is available from your supplier. Once the glass is positioned you’re ready to fire.

Firing Procedure

General Firing Procedure

It's not possible to layout an exact firing schedule for all glass. Much depends on the type of hot glass work that is being done, the type of glass that's being used and the effects desired. The following procedure is a very basic fusing schedule. It's designed primarily to teach you about the various control functions and what is done throughout a firing.

Generally speaking, glass can be taken to 1000°F in the first hour of firing. This rate allows the temperature of the glass to increase relatively quickly without breakage. After the 1000°F temperature has been reached the glass can be fired as fast as possible to the fusing temperatures or until desired results are achieved. Fusing temperatures range from 1300 to 1500°F. Once desired results are achieved the kiln is vented quickly to stop further changes to the glass. After this venting period the kiln is closed and allowed to cool slowly which anneals the glass.

Firing Procedure for Automatic Controls

Once glass is loaded prop the lid open ½ to 1" with a post or firebrick and open the peephole. This allows fumes from adhesives and organic materials to escape. Gold, silver, decals, paints release fumes while firing and will leave an unwanted finish on the glass. If you're not firing any items such as these you may skip this step.

Program your automatic control with the firing information. A separate programming manual has been included for your control. Read it thoroughly and become familiar with it before attempting to fire. It's wise to develop your firing plans before attempting to program.

Start the firing.

If the lid was propped open, close the lid once 1000°F has been reached.

Check the firing periodically. Continue to fire until desired results are achieved.

Once the desired results are achieved vent the kiln to stop further changes to the glass. Check the automatic control to see that it is either off or following your actions. It may be necessary to reprogram or skip ahead in the program to reach this point. Venting can be accomplished in many ways. You may prop the lid open with a post or firebrick or you may open and close the lid slightly for a number of times. The point here is to stop further changes to the glass. Choose a technique you feel comfortable with. It must be mentioned that protective clothing, gloves and eyewear be worn when handling a hot kiln. This is important at any stage of the firing.

Continue venting until the temperature falls to about 1100°F or so. When the chamber reaches this temperature, close the lid completely. The temperature of the firing chamber tends to rise a bit once the lid is closed. This is normal and will generally not harm or change the glass.

The glass must now be allowed to anneal. Annealing is the process of reducing internal stresses in the glass. Your glass will have an annealing temperature, however, it's often unknown and often not given by the manufacturer. In this case we perform what we call a "shotgun anneal": allowing the temperature of the kiln to cool slowly over a period of time. In this way it's assumed that the anneal temperature will be within the slow cooling range. Typically, this slow cooling takes place

between 1100°F and 600°F. How slow is slow? Thinner glass anneals faster than thicker glass. General rates may be between 60 to 100°F per hour. When in doubt, go slow. You can't over anneal glass.

Once the temperature of the kiln is below your annealing range allow the kiln to cool to room temperature. Once cooled to room temperature it's safe to remove the glass from the kiln.

Firing procedure Using Infinite Controls (Manual Control)

Once glass is loaded prop the lid open ½ to 1" with a post or firebrick and open the peephole. This allows fumes from adhesives and organic materials to escape. Gold, silver, decals, paints release fumes while firing and will leave an unwanted finish on the glass. If your not firing any items such as these you may skip this step.

The goal is to reach 1000°F in about an hour. A pyrometer is a valuable tool which displays kiln chamber temperature. You'll need one. Talk to your supplier. In general, 1000° is "red heat". That is to say that once the chamber attains a nice red glow you're about at 1000°F.

Rotate all switches to the Low position and allow the kiln to fire for 30 minutes.

Rotate all switches to the Med setting and allow to fire until the temperature reaches 1000°F. These settings and times are general and you'll want to adjust them to fit your kiln, load and type of work.

Once the 1000°F has been reached, close the lid completely (if propped open) and shut all peepholes.

Rotate all switches to the High position. Check the firing periodically. Continue to fire at this high setting until desired results are achieved.

Once the desired results are achieved rotate all switches to the Off position and vent the kiln to stop further changes to the glass. Venting can be accomplished in many ways. You may prop the lid open with a post or firebrick or you may open and close the lid slightly for a number of times. The point here is to stop further changes to the glass. Choose a technique you feel comfortable with. It must be mentioned that protective clothing, gloves and eyewear be worn when handling a hot kiln. This is important at any stage of the firing.

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Once the temperature of the kiln is below your annealing range, turn off any remaining switches and allow the kiln to cool to room temperature. Once cooled to room temperature it's safe to remove the glass from the kiln.

Record Keeping

It's recommended that you keep records of your firings. You will want to record what is being fired, when it's fired, glasses used, heating and cooling times and temperatures, switch or controller settings, venting and final results.

As mentioned in the Firing Procedure for Automatic Controls it is wise to develop your firing information on paper before actually programming the kiln. Segments, rates temperatures and the like can be reviewed before being programmed. Not only will this act as a double check, it will provide you with a written record. Accurate record keeping will allow you to repeat particular firings along with giving you a "feel" for what's going on and how it happens.

Kiln Maintenance

Before Each Firing

Check the firing chamber for debris

Vacuuming your kiln before each firing will help insure that dust will not effect your ware. Look over the lid and remove any loose brick pieces.

Check all firing surfaces for cracks and kiln wash. Recoat with kiln wash if necessary.

Lid Maintenance and Repair

During the firing your lid will expand and contract. It's necessary to tighten the band clamps on the lid after each of the first three firings. These clamps should be checked periodically after and tightened as needed.

Small, hairline cracks may appear in the lid and bottom. This is normal and does not effect the firing in any way. Should chips or large cracks appear they should be repaired to prevent sifting or becoming larger. Small chips may be cemented back into place. For large chips, a portion of firebrick may need to be removed and a new brick, cut to size, cemented in. Sand smooth.

Figure 1

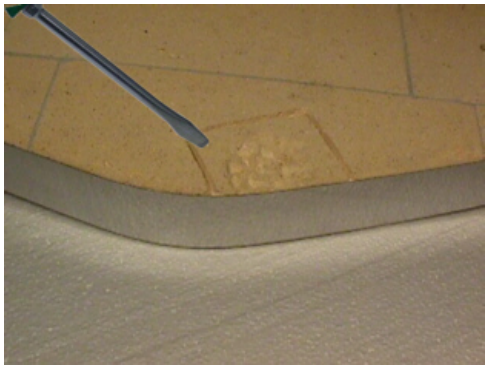


Figure 2

Figure 3

Figure 4

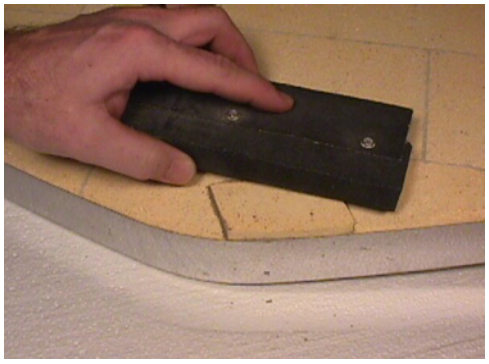


Figure 5

Figure 6

Figure 1 Chip in lid to be repaired.

Figure 2 Gouge with a screwdriver tip or similar object a rectangle or square outline of chipped area.

Figure 3 Using a screwdriver as a chisel point, gouge out chipped area.

Figure 4 Cut filler piece of brick to fit gouged out area. Fill gouged area with kiln repair cement.

Figure 5 Place filler brick into cemented area.

Figure 6 With sanding block, smooth to match rest of surface. Recoat underside of lid with thinned out Kiln Repair Cement.

Sidewall Maintenance and Repair

If glass or other foreign material has embedded itself into the brick use a small screwdriver or knife to remove. Be careful, the firebrick is fragile. Foreign matter on the brick will lead to further destruction and possible element failure. Should a piece of brick chip off from the sidewall, it's possible to cement it back on. Care should be used around heating elements. Do not allow the cement to get on the heating elements as this may cause element failure.

Side Element Replacement

As with any repair, remove power from the kiln.

Figure 1 & 2
Remove the red panel that houses the element ends. You will see the element ends protruding from the brick. Locate the two element ends of the faulty element and remove the connectors and black and/or blue wires from each.

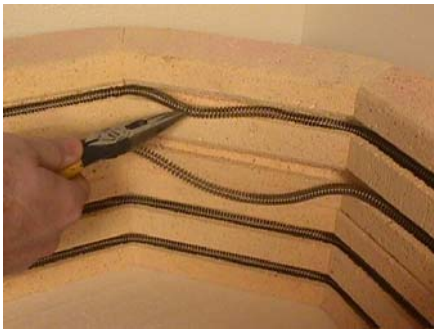
Figure 3
Using long nose pliers, carefully remove the element from the firebrick groove. Go easy, the brick is fragile and will break if care is not given.

Figure 4 & 5
Install the new element. Start by inserting one end through the brick and attach the connector and black or blue wire. Using a wooden spoon or similar device, push the element into the groove. Keep in mind that the element is longer than the groove. This design allows the element to expand and contract without pulling out of the groove. Go slow and you'll do just fine.
Fi**gure 6 & 7**
Insert the other end of the element through the brick and attach the element connector and black or blue wire. Use wire cutters to snip off excess element ends.

Re-attach the red panel to the kiln.

Figure 1

Figure 2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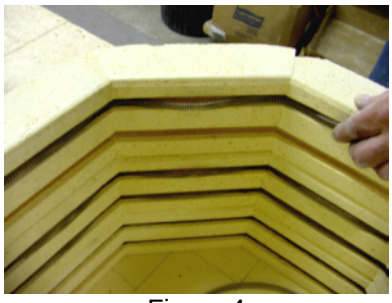
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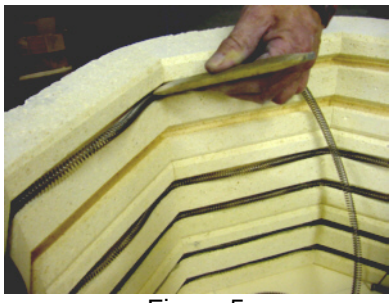


Figure 5

Figure 6

Figure 7

Lid Element Replacement

As with any repair, remove power from the kiln.

Figure 1 & 2
Remove the red panel located on the lid. This panel houses the lid element ends. You will see the element ends protruding from the brick. Locate the two element ends of the faulty element and remove the brass connectors and the black and/or blue wires from each. Make a note of which wire connects to which element end. *The brass connectors are secured tightly. It's recommended that you grasp the brass connector with pliers while performing this procedure.*

Figure 3
Using long nose pliers remove the element from the lid groove. Go easy, the brick is fragile and will break if care is not given.

Figure 4, 5, 6, & 7
Install the new element. Start by inserting one end through the brick. Pull the element end until snug and place cylindrical porcelain insulator on. Install the brass connector and fully insert wire. Tighten the brass connector set screw. Be sure that the set screw is tight – this ensures a good connection. Use wire cutters to snip off excess element ends.
Using a wooden spoon or similar devise, push the secured end of the element into the lid groove. Be careful not to destroy the groove edges. Continue inserting the element until you're about 3/4 of the way complete.

Figure 8 & 9
Install the remaining end of the element through the brick as described in step 3. Once completed, finish inserting the element in the lid groove. *It's possible that the new element may be slightly longer or shorter than the lid groove. The element is quite pliable and you may physically stretch or compress it to fit.*
Double check that you have cut off all excess element leads at the brass connectors.

Re-install the red control panel back on the lid. When doing so, move wiring away from the brass connectors as it's placed on.

Figure 1

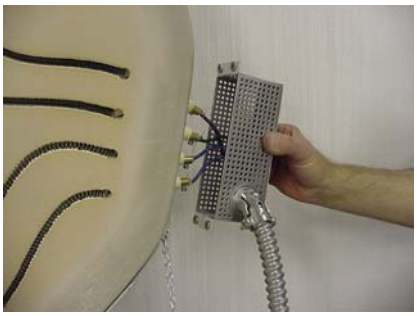


Figure 2

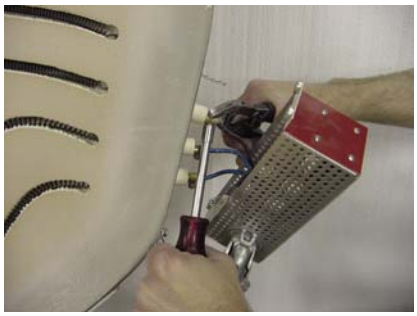
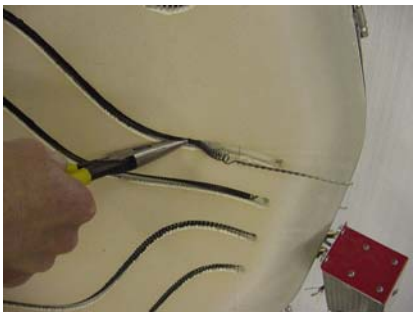


Figure 3



Thermocouple Replacement

Figure 4

Figure 5

Figure 6

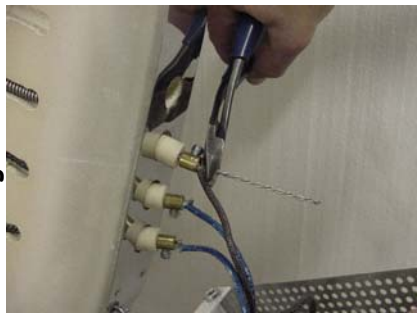


Figure 7

Figure 8

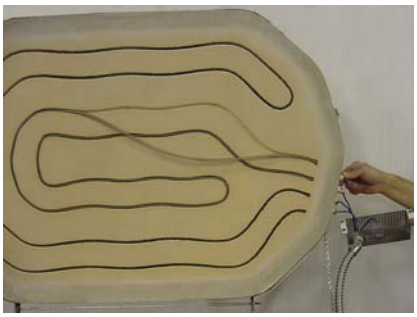
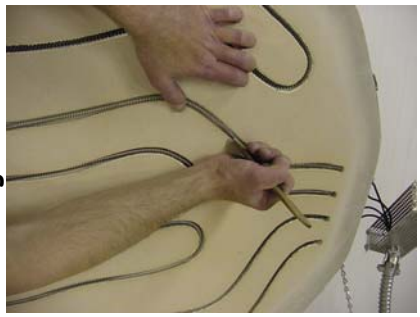


Figure 9



As with any repair, remove power from the kiln.

Figure 1 & 2 & 3
Remove the red panel. Locate the oval shaped porcelain thermocouple block and remove the outside mounting screws. Pull thermocouple out. Locate the center 2 screws that hold the thermocouple wires in place and loosen them. Remove thermocouple wires from block. Attach thermocouple wires to new thermocouple & block. Tighten all screws securely. Replace the red panel making sure to keep all black wires away from the white thermocouple lead.

Note: if after the thermocouple has been replaced, you find the temperature now reads down, you need to be sure that the magnetic lead (which is marked in red) is connected to the magnetic side (red) of the thermocouple wire.

re 1

Figure 2

Figure 3

Trouble Shooting

TROUBLE	PROBABLE CAUSE	CORRECTIONS
(1) Switches on & Kiln doesn't heat Or Computer Program Running & Kiln doesn't heat	(a) Blown fuse/tripped circuit breaker (b) Kiln NOT plugged in (c) Loose connection (d) Faulty switch (e) Element burned out (f) Stuck relay (g) Improper data programmed	(a) Replace fuse/reset circuit breaker (b) Plug kiln in (c) Tighten (d) Replace (e) Replace (f) Replace (g) Review and re-enter data
(2) Fuse blows/circuit breaker trips as soon as kiln is turned on	(a) Short in Kiln (b) Service wired wrong (c) Fuse or circuit breaker too small (d) Overloaded circuit	(a) Check wiring (b) Have electrician check service from fuse box to kiln (c) Check electrical specifications – replace with right size (see note at bottom) (d) Disconnect all other appliances, etc. from circuit
(3) Fuse blows/circuit breaker trips during firing	(a) Defective fuse(s) or worn circuit breaker (b) Fuse, wire size or circuit breaker too small (c) Overloaded circuit (d) Loose or corroded connections (e) Short in kiln	(a) Replace fuse(s) or breaker (b) Check electrical specifications – replace with right size (see note at bottom) (c) Disconnect all other appliances, etc. from circuit (d) Tighten or clean (e) Check wiring
(4) Kiln takes too long to fire	(a) Voltage too low (b) Service wired wrong (c) Loose connection between fuse box and kiln wiring (d) Element or switch burned out (e) Elements gradually wearing out (f) Relay stuck (g) One side of fuses or breaker blown (h) Improper data programmed	(a) Have electrician or power company check voltage – see specifications (b) Have electrician check service – see specifications (c) Check and tighten all connections (d) Replace (e) Replace (f) Replace (g) Replace (h) Review and re-enter data
(5) Kiln heats with Computer Controller off	(a) Relay Stuck	(a) Replace
(6) Kiln shuts off too soon	(a) Fuse blows/circuit breaker trips (b) Computer controller displays Error Message	(a) Replace fuse/reset circuit breaker (b) See Computer Controller Operating Handbook
(7) Hot or partially melted plug or wall receptacle * Kiln should be shut down immediately – DISCONNECT POWER	(a) Loose connection at wall receptacle (b) Worn receptacle or plug (c) Defective cord (d) Corroded cord prongs/or receptacle terminals	(a) Have electrician check and tighten connections (b) Have electrician replace (c) Replace immediately (d) Sand cord prongs to remove corrosion. A qualified electrician can replace cord or receptacle if needed.

Troubleshooting cont.

All Kilns are tested and checked at the factory before being OK'd for shipment. Most problems with newly installed kilns are in the customers' service to the kiln. Even if installed by an electrician the main problems are: wire size, circuit breaker or fuse size being too small, loose connections, etc.

- When working on repairs, be sure power supply cord is removed from wall receptacle and all power is turned off.
- A qualified electrician or service person should do all repairs.
- The electrical supply going into a kiln can be dangerous if not done properly.
- IMPORTANT – Check electrical specifications.

NOTE: Check electrical specifications to see if your fuse or breaker is large enough.
DO NOT **install a larger fuse or breaker unless a qualified electrician says your service can handle it.**

EVENHEAT KILN, INC.
LIMITED KILN WARRANTY

Evenheat Kiln, Inc. guarantees to the original purchaser that for a period of two full years from the date of purchase the kiln will be free of defects in workmanship and materials when used under normal and proper operating conditions. Evenheat will replace or repair any defective part as specified..

FOR THE WARRANTY TO BE EFFECTIVE THE PURCHASE MUST:

(1) Provide written proof of date of purchase. (Warranty card sent in at time of purchase.)
(2) Notify the Evenheat Distributor/Dealer from whom the kiln was purchased, within 10 days after defect has been discovered.
(3) Make kiln immediately available for inspection.

FOR WARRANTY REPAIRS:

(1) Warranty repairs should be handled through the Distributor/Dealer from whom the kiln was purchased, who will arrange for any repairs or replacement of parts under the terms of this warranty upon receipt of the kiln (or defective part). Otherwise the defective part may be returned (postage prepaid) to Evenheat Kiln, Inc. P.O. Box 300 6949 Legion Drive Caseville, MI 48725. If, after factory examination, the original part is found to be defective, a new or repaired part will be shipped prepaid by Evenheat Kiln, Inc.
(2) If the entire kiln is to be returned to the factory, all transportation costs will be borne but he purchaser. The purchaser should notify Evenheat Kiln, Inc. (989) 856-2281 prior to shipping. Evenheat will help advise the best shipping method and if it is necessary to return the entire kiln or only certain parts. Warranty work will be performed within 30 days after defective part is returned to the factory.
(3) Evenheat Kiln, Inc. reserves the right, at its option, to replace the entire kiln or any part of it in order to fulfill its obligation under this warranty.

THIS WARRANTY DOES NOT COVER:

(1) Freight damage, kilns altered in any way, abuse or neglect, moisture, improper storage or installation.
(2) Kiln overfired (reaching temperature higher than melting point of ware inside kiln) regardless of cause.
(3) Dawson Kiln Sitter or Limit Timer.
(4) Kilns operated on incorrect voltage.
(5) Improper electrical installation.
(6) Kiln furniture or ware.
(7) Kilns used for reduction or salt firing.
(8) Kilns used for purposes other than the firing of glass materials.
(9) Kilns operated in excess of the cone or temperature on the rating plate.
(10) Damage to Property or personal injury that may occur from kilns that are fired on or near wood floors or combustibles.
(11) Damage to property or personal injury that may occur from improper ventilation of the work area and building structure.

This warranty is in lieu of all other warranties, expressed, or implied.

Evenheat Warranty cont.

Evenheat Kiln, Inc. neither assumes nor authorizes any Distributor/Dealer, Retailer or employee to assume for it any other obligations or liabilities in connection with Evenheat Kilns.

This warranty is limited as specified above and excludes incidental or consequential damages. Some states or providences do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.